

Geometry Date_____ 5.3 Assignment

Medians and altitudes of a triangle (pp 279–281)

1. What is your name?

Use the diagram shown and the given information to name each segment as one of the special segments of a triangle.

$$m\angle RSV = m\angle TSV, RU = UT, \text{ \& } \overline{SY} \cong \overline{TY}$$

2. \overline{RZ}

altitude.

3. \overline{SV}

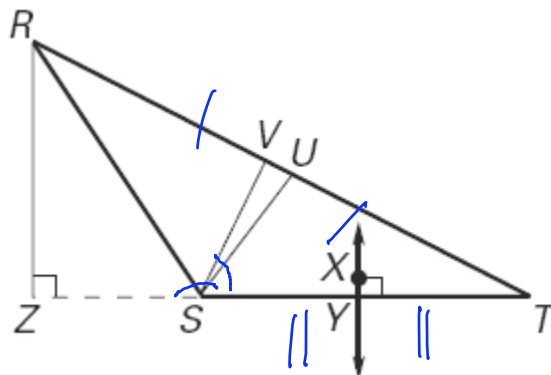
angle bisector.

4. \overline{SU}

median

5. \overline{XY}

perpendicular bisector



Use the figure shown and the given information.

G is the centroid of $\triangle ABC$, $AD = 15$, $CG = 13$, & $\overline{AD} \perp \overline{CB}$.

6. Find AG.

10

7. Find GD.

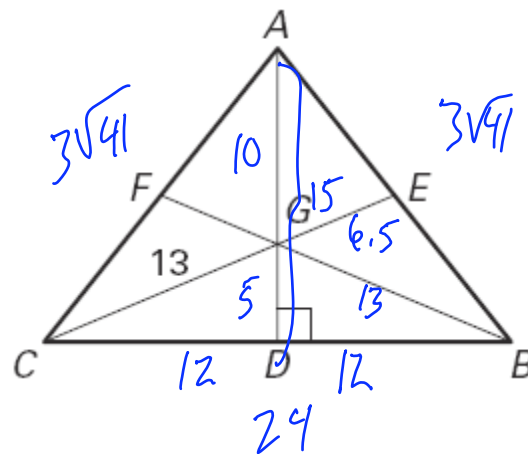
5

8. Find CD.

12

9. Find GE.

6.5



10. Find GB.

13

11. Find the perimeter of $\triangle ABC$.

64

$\sqrt{369}$
 $3\sqrt{41}$

$24 + 6\sqrt{41} \approx 62.42$

Geometry Date_____ 5.3 Assignment

Medians and altitudes of a triangle (pp 279–281)

Write S if the sentence is sometimes true, A if the statement is always true, and N if the statement is never true.

12. The centroid of a triangle is the S circumcenter of the triangle.

13. The altitude from the vertex angle of an isosceles triangle is A the median.

14. The median to any side of an equilateral triangle is A the angle bisector.

15. The altitudes of an acute triangle S intersect outside the triangle.

Use the graph shown.

16. Find the coordinates of D, the midpoint of \overline{AB} .

$(-4, 1)$

17. Find the length of the median, CD.

$$\sqrt{8^2 + 9^2}$$

$$\sqrt{90}$$

$$3\sqrt{10} \approx 9.49$$

18. Determine the equation of line \overline{CD} .

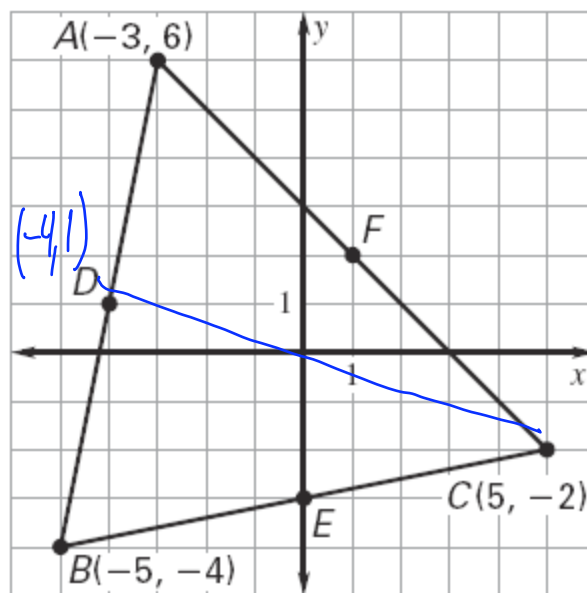
$$m = -\frac{3}{9} = -\frac{1}{3}$$

$$y + 2 = -\frac{1}{3}(x - 5)$$

$$y + 2 = -\frac{1}{3}x + \frac{5}{3}$$

19. Find the coordinates of the centroid. Label this point at G.

$$y = \frac{1}{3}x - \frac{1}{3}$$



Geometry Date _____ 5.3 Assignment
Medians and altitudes of a triangle (pp 279–281)

$$(-1, 0)$$

20. Find the coordinates of E, the midpoint of \overline{CB} .

$$(0, -3)$$

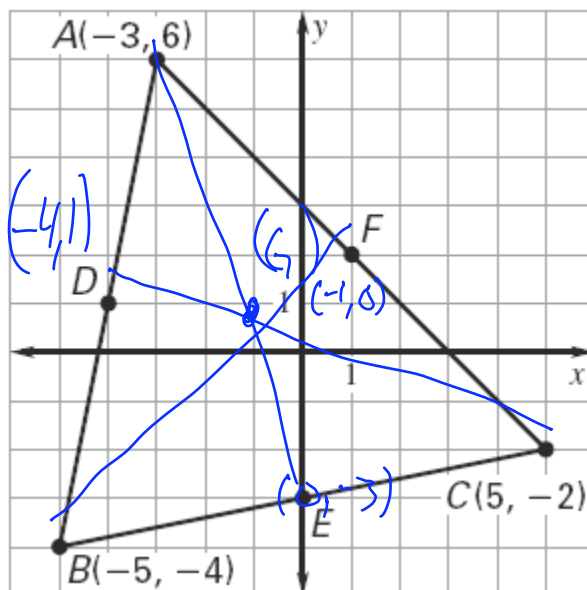
21. Determine the equation of \overline{AE} .

$$m = -\frac{9}{3} = -3 \quad \begin{aligned} y + 3 &= -3x \\ y &= -3x - 3 \end{aligned}$$

22. Show that $\frac{AG}{AE} = \frac{2}{3}$.

$$AG = \sqrt{36 + 4} = \sqrt{40} = 2\sqrt{10}$$

$$AE = \sqrt{81 + 9} = \sqrt{90} = 3\sqrt{10}$$



23. Determine the point of intersection of \overline{CD} & \overline{AE} . Is the point of intersection G?

$$\begin{aligned} &\left\{ \begin{aligned} -\frac{1}{3}x - \frac{1}{3} &= -3x - 3 \\ -x - 1 &= -9x - 9 \end{aligned} \right. \\ &8x = -8 \\ &x = -1 \end{aligned}$$

$$\begin{aligned} x &= -1 \\ y &= 0 \\ (-1, 0) \end{aligned}$$

Geometry Date_____ 5.3 Assignment

Medians and altitudes of a triangle (pp 279–281)

Review.

Write an equation of the line that passes through point P and is parallel to the line with the given equation. (Chapter Section 3)

24. P(1, 7); $y = -x + 3$

$$y - 7 = -1(x - 1)$$

$$y - 7 = -x + 1$$

$$y = -x + 8$$

25. P(4, -9); $y = 3x + 5$

$$y = 3x - 21$$

26. P(-3, -8); $y = -2x - 3$

$$y = -2x - 14$$

27. P(4, -2); $y = -\frac{1}{2}x - 1$

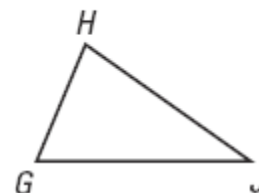
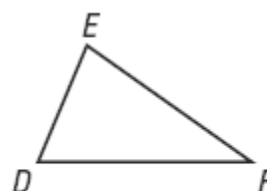
$$y = -\frac{1}{2}x$$

State the third congruence that must be given to prove that $\triangle DEF \cong \triangle GHJ$ using the indicated postulate or theorem. (Chapter 4 Section 4)

28. Given: $\angle D \cong \angle G$
 $\overline{DF} \cong \overline{GJ}$

AAS Congruence theorem

$$\angle E \cong \angle H$$



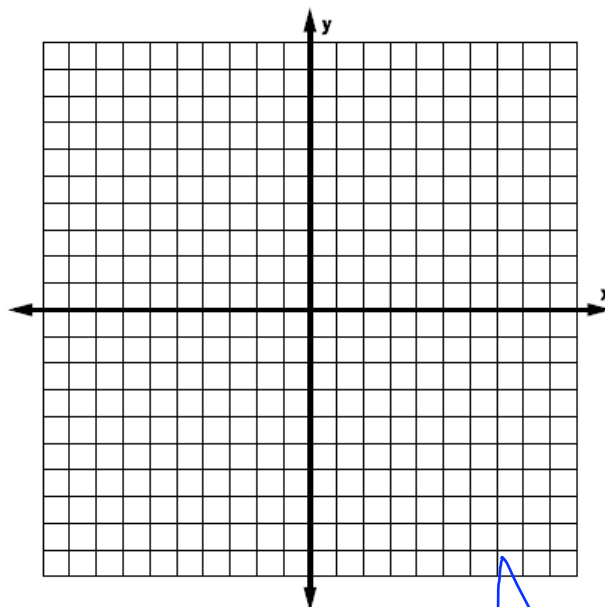
29. Given: $\angle E \cong \angle H$
 $\overline{EF} \cong \overline{HJ}$

ASA Congruence Postulate

$$\angle F \cong \angle J$$

Geometry **Date**_____ **5.3 Assignment**
Medians and altitudes of a triangle (pp 279–281)

30. Place a right triangle with legs of length 9 units and 13 units in a coordinate plane and find the length of the hypotenuse. (Chapter 4 Section 7)



$5\sqrt{10}$

